circuit **26**. Controller **450** sends a signal along line to solenoid valve **403**, opening it, allowing refrigerant to flow into condenser circuits **6**. Reheat sensor **415** provides a signal to controller **450** indicative of the pressure in the suction line of compressor **2**. If the pressure in the line is above a predetermined limit, the controller **450** maintains solenoid valve **413** in a closed position. However, if the pressure falls below a predetermined limit, as determined by controller **450** which is monitoring the signal from pressure sensor **415** along line **468**, a signal is sent by controller **450** to solenoid valve **413**, opening it and allowing refrigerant to be drawn from condenser circuits **6** into reheat circuit **26** by the suction of compressor **2**. When pressure sensor **415** indicates to controller **450** that the pressure has risen sufficiently, again to a predetermined limit, controller **450** sends a signal along lines **460** and **454** lines **454** to close solenoid valve **413**.

[**0047**] As may be clear, it is possible to control the operation of both valves **403** and **413** with a single sensor. In this case, the activation of the reheat circuit **26** (or inactivation of the cooling circuit **49**) results in the opening of valve **403**. Valve **413** is controlled as set forth above. Either valves is closed by controller **450** in response to a signal from the sensor indicating that the pressure is within a preselected range. For example, if the sensor indicates a high pressure, the controller can send a signal to effect operation of valve **403** until the pressure is reduced, at which time valve **403** is closed. Similarly, if a low pressure is indicated by the sensor, the controller can similarly effect operation of valve **413**.

[**0048**] The arrangement of **FIG. 4** with the use of a sophisticated controller or control program can result in a very complex system operation, which is beyond the scope of the present invention. It must be considered, however, that a series of sensors can be set up to detect conditions of the air. These sensed conditions can be of the return air or the supply air or both, and can include, for example, humidity or temperature. The control program can assess the sensor signals to determine whether the air is being properly dehumidified and/or warmed after passing through the system. Based on the sensed conditions, the control program can determine the set points required for operation of valves **403**, **413** in order to obtain proper dehumidification and reheat. The amount of refrigerant in the reheat circuit can be adjusted to provide the proper refrigerant evaporation temperature in the evaporator, which is related to system pressure. Although the operational details of such a complex system are beyond the scope of the present disclosure, the mechanical arrangement of **FIG. 4** make such a complex yet efficient system possible.

[**0049**] While the invention has been described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

What is claimed is:

1. A system having a hot gas reheat circuit and a cooling circuit comprising:

the cooling circuit comprising:

a compressor having a high-pressure discharge side and a low-pressure suction side, the compressor in fluid communication with a condenser, an evaporator in fluid communication with the condenser and with the compressor, an expansion device between the condenser and the evaporator, and a check valve to prevent the back flow of refrigerant into the condenser from a downstream side of the condenser;

the hot gas reheat circuit comprising:

the compressor having a high-pressure discharge side and a low-pressure suction side, the compressor in fluid communication with a reheat heat exchanger, the evaporator in fluid communication with the reheat heat exchanger and with the compressor, an expansion device between the reheat heat exchanger and the evaporator, and a check valve to prevent the back flow of refrigerant into the reheat heat exchanger from the cooling circuit when the cooling circuit is activated;

the system further including a first means for controlling a flow of a refrigerant in fluid communication with the discharge side of the compressor and switchable between a first position in which high pressure refrigerant flows through the hot gas reheat circuit and is blocked from flowing to cooling circuit and a second position in which the refrigerant flows to the cooling circuit and is blocked from entering the reheat circuit;

means for directing air from a space across the evaporator to cool and dehumidify the air and, when activated, the reheat exchanger to reheat the air;

a cooling by-pass circuit providing fluid communication between the suction side of the compressor and the reheat heat exchanger including a second means for controlling the flow of remaining refrigerant out of the hot gas reheat circuit and switchable from a first position in which refrigerant flows from the hot gas reheat circuit when the first means for controlling is positioned to direct refrigerant to the cooling circuit and a second position in which the flow of refrigerant is blocked from leaving the hot gas reheat circuit when the first means for controlling is positioned to direct refrigerant to the reheat circuit; and

a third means for transferring excess refrigerant from the reheat circuit to the condenser in the cooling circuit in response to a preselected condition in the hot gas reheat circuit when the first means for controlling is positioned to direct refrigerant to the hot gas reheat circuit.

2. The system of claim 1 having the hot gas reheat circuit and the cooling circuit, one of which circuits includes the compressor, further including a second compressor in the remaining circuit.

3. The system of claim 1 wherein the system includes a single expansion device the single expansion device positioned within the system on the upstream side of the evaporator, the hot gas reheat circuit utilizing the compressor, the